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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,301	02/23/2006	Jeffrey M. Cogen	63376AUS	4545
35503	7590	11/24/2008	EXAMINER	
Union Carbide Chemicals and Plastics Technology Corporation P.O. Box 1967 Midland, MI 48641-1967			LEE, RIP A	
ART UNIT	PAPER NUMBER			
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/569,301	<b>Applicant(s)</b> COGEN ET AL.
	<b>Examiner</b> RIP A. LEE	<b>Art Unit</b> 1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 04 September 2008.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-4,6,7,11,12,14,22 and 23 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-4, 6, 7, 11, 12, 14, 22 and 23 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

### **DETAILED ACTION**

This office action follows a response filed on September 4, 2008. Claims 1, 11, 12, and 22 were amended to limit the viscosity of the polysiloxane component, and claims 4 and 6 were amended to correct matters of form. Claims 1-4, 6, 7, 11, 12, 14, 22, and 23 are pending.

#### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 2, 4, 6, 7, 12, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith *et al.* (U.S. 5,218,027) in view of Yokoyama *et al.* (JP 61-255951).

Smith *et al.* teaches a fire-retardant thermoplastic composition containing 5-60 wt % of an ethylene-ethylene acrylic acid copolymer or ethylene-methacrylic acid copolymer, 1-15 wt % of an organopolysiloxane having a viscosity of up to  $300 \times 10^6$  cP at 25 °C, 20-85 wt % of a Group I-III metal oxide hydrate (aluminum hydroxide or magnesium hydroxide), and up to 30 wt % of one further resin that is an ethylene-propylene copolymer grafted with maleic anhydride (claims 1-5, 8, 12). Inventive compositions are used for construction articles and wire insulation (col. 3, line 34). For the organopolysiloxane component, Smith *et al.* reports an absolute viscosity (cP), which is readily converted to kinematic viscosity (cSt) by dividing absolute viscosity by specific gravity. Although the specific gravity of the organopolysiloxane is not recorded, it may be reasonably concluded that specific gravity is about unity such that the upper limit of  $300 \times 10^6$  cP translates to a kinematic viscosity well above  $1 \times 10^6$  cP. From the working examples, one finds that the ethylene-(meth)acrylic base resin is commercially available as Primcor 3330 ( $d = 0.932$ ) and 3460 ( $d = 0.938$ ). Smith *et al.* is silent with respect to the density of the commercially available graft modified ethylene-propylene component. One of ordinary skill in the art practicing the invention of Smith *et al.* and not able to locate the particular polymer used in the examples, would have found it obvious to make the graft modified copolymer using an ethylene-propylene resin that is comparable in density to that of the

ethylene-(meth)acrylic base resin in order to make a uniform blend that has good processability. The person of ordinary skill in the art would have learned from Yokoyama *et al.* ethylene-propylene resin having a density in the range of 0.86-0.91 g/cm<sup>3</sup> has good processibility and moldability, and is therefore ideal for making wire insulation (abstract). The combination of references would have suggested that the ethylene-propylene resin of Yokoyama *et al.* is well-suited for use as the resin for making graft modified ethylene-propylene, and the combination would be obvious since both references relate to compositions for making wire insulation. Therefore, it would have been obvious to one having ordinary skill in the art to make the composition of Smith *et al.* by using a graft-modified ethylene propylene copolymer prepared from the ethylene propylene copolymer of Yokoyama *et al.*, and one having ordinary skill in the art would have expected the combination of teachings to work with a reasonable expectation of success.

3. Claims 1, 2, 4, 6, 7, 12, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harashige *et al.* (U.S. 5,317,051) in view of Pawar (U.S. 4,871,795) and in view of evidence given by Rolland (U.S. 4,948,669).

Harashige *et al.* teaches a flame retardant olefin polymer composition comprising 60-99 wt % of polyolefin resin, 140 wt % of olefin polymer modified with an unsaturated carboxylic acid, 5-200 parts by weight of a flame retardant, and a silicone (claim 1). The olefin polymer is an ethylene-unsaturated ester copolymer (col. 2, lines 56-65). In another embodiment of the invention, the olefin polymer is an ethylene- $\alpha$ -olefin copolymer (col. 2, lines 23-26, col. 8, line 48). The modified olefin polymer has a density in the range of from 0.86 to 0.97 g/cm<sup>3</sup>; working examples show use of a modified LLDPE, which by definition has a density on order of 0.90-0.92 g/cm<sup>3</sup> (see Rolland, col. 1, line 38). The flame retardant is aluminum hydroxide or magnesium hydroxide (col. 5, line 40). The silicone may be a silicone oil, a silicone rubber, or silicone resin (col. 6, lines 25-27), and although silicone oils are preferred, one having ordinary skill in the art would have found it obvious to use silicone resin because Harashige *et al.* clearly teaches that silicone resin is a useful silicone material, and one of ordinary skill in the art would have expected all silicone materials disclosed in the reference to produce an effective flame retardant composition. Harashige *et al.* is silent with respect to the identity of the silicones.

Pawar (U.S. 4,871,795) discloses silicone oils and silicone resins that are used as flame retardant for polyolefin resins. Silicone oils have a viscosity of up to  $300 \times 10^6$  cP at 25 °C. A well-known class of silicone resins are "MQ" resins, which are commercially available as SR545 (60 % MQ resin solids); col. 2, lines 26-28, 44-46 and 56-58. Pawar also teaches that MQ resin and silicone oil may be used together (col. 2, lines 58-60). Pawar reports an absolute viscosity (cP), which is readily converted to kinematic viscosity (cSt) by dividing absolute viscosity by specific gravity. Although the specific gravity of the organopolysiloxane is not recorded, it may be reasonably concluded that specific gravity is about unity such that the upper limit of  $300 \times 10^6$  cP translates to a kinematic viscosity well above  $1 \times 10^6$  cP. The silicone resin exists as a solid at ambient temperature, and it follows that the viscosity is considerably greater than  $1 \times 10^6$ .

The combination of references would have suggested that the silicone oil and silicone resin of Pawar is well-suited for use as the silicone described by Harashige *et al.* because these materials are shown to confer flame retardant properties. Therefore, it would have been obvious to one having ordinary skill in the art to use silicone oil having viscosity of up to  $300 \times 10^6$  cP and SR545 as silicone oil and silicone resin, respectively, in compositions of Harashige *et al.*, and the person of ordinary skill in the art would have expected to make an effective flame retardant composition with a reasonable expectation of success. The combination is obvious because Harashige *et al.* discloses use of silicones and Pawar furnishes the otherwise missing identity of these compounds.

4. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harashige *et al.* in view of Pawar/Rolland as applied to claims 1, 2, 4, 6, 7, 12, 22, and 23 above, and further in view of Hayashi *et al.* (U.S. 5,889,087).

The discussion of the disclosures of the prior art from previous paragraph 3 of this office action is incorporated here by reference. In one embodiment of the invention of Harashige *et al.*, the olefin polymer is an ethylene- $\alpha$ -olefin copolymer (col. 2, lines 23-26, col. 8, line 48). The working examples show that this polymer is a linear low density-type polyethylene having a density of 0.900 g/cm<sup>3</sup> and a melt index of 1.0 g/10 min. One of ordinary skill in the art

practicing the invention of Harashige *et al.* and not able to locate the particular polymer used in the examples, would have found it obvious to use another commercially available polymer having similar properties. The prior art of Hayashi *et al.* relates to flame retardant cable compositions. The composition is comprised of linear low density polyethylene (Affinity) having a density of 0.906 g/cm<sup>3</sup>, a melt flow of 1 g/10 min, and a molecular weight distribution  $M_w/M_n$  of 2.4 (col. 10, line 10). The combination of references would have suggested to the person of ordinary skill in the art that the Affinity resin of Hayashi *et al.* is a suitable replacement for the ethylene- $\alpha$ -olefin copolymer of Harashige *et al.* because the polymers have near identical properties. Therefore, it would have been obvious to one having ordinary skill in the art to make the composition of Harashige *et al.* using the Affinity resin of Hayashi *et al.*, and since polymers of both references have similar properties, one having ordinary skill in the art would have expected the substitution to work with a high degree of success.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harashige *et al.* in view of Pawar/Rolland, and further in view of Hayashi *et al.* for the same reasons set forth in previous paragraphs 3 and 4 of this office action.

Briefly, it would have been obvious to make the wire insulation composition of Harashige *et al.* using a silicone oil having viscosity of up to  $300 \times 10^6$  cP or SR545 silicone resin, as taught in Pawar, as the silicone component. It also would have been obvious to make a wire insulation composition using the Affinity resin of Hayashi *et al.* as the ethylene- $\alpha$ -olefin copolymer. There is no disclosure of the limiting oxygen index (LOI) of the composition of Harashige *et al.* as modified by Pawar and Hayashi *et al.*, however, in view of the fact that the composition is substantially the same as that described in the instant claims, a reasonable basis exists to believe that the composition will exhibit substantially the same LOI property. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

6. Claims 1, 2, 4, 12, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson *et al.* (U.S. 5,091,453) in view of Smith *et al.* (U.S. 5,218,027) and Yokoyama *et al.* (JP 61-255951).

Davidson *et al.* teaches a flame retardant composition comprising an organic polymer of ethylene and a comonomer selected from alkyl (meth)acrylate, (meth)acrylic acid and vinyl acetate, a silicone gum, and inorganic filler. The silicone gum has a viscosity of  $20 \times 10^6$  cP at 25 °C (col. 3, line 8). Davidon *et al.* reports an absolute viscosity (cP), which is readily converted to kinematic viscosity (cSt) by dividing absolute viscosity by specific gravity. Although the specific gravity of the organopolysiloxane is not recorded, it may be reasonably concluded that specific gravity is about unity such that the upper limit of  $300 \times 10^6$  cP translates to a kinematic viscosity well above  $1 \times 10^6$  cP. Davidon *et al.* does not disclose an ethylene polymer modified with anhydride.

Smith *et al.* teaches flame retardant compositions also containing ethylene-(meth)acrylic acid copolymer as the base resin. The inventors have found that improved flame retardancy is achieved by incorporation of up to 30 wt % of an ethylene-propylene copolymer grafted with maleic anhydride. The inventors teach that this effect is observed because maleic anhydride produces more intumescent foam or char during combustion. This is likely to arise from crosslinking of the anhydride groups of the modified polyolefin with the carboxylic groups of the base resin (col. 9, lines 49-60). One having ordinary skill in the art would have been motivated to improve the flame retardancy of the composition of Davidson *et al.* for safety considerations, and therefore, it would have been obvious to modify the composition of Davidson *et al.* by incorporation of an ethylene-propylene copolymer grafted with maleic anhydride. Since polymers of Davidson *et al.* also contain carboxyl groups, one having ordinary skill in the art would have reasonably expected crosslinking to occur, leading to improved flame retardancy.

Smith *et al.* is silent with respect to the density of the commercially available graft modified ethylene-propylene component. One of ordinary skill in the art practicing the invention of Smith *et al.* and not able to locate the particular polymer used in the examples, would have found it obvious to make the graft modified copolymer using an ethylene-propylene resin that is comparable in density to that of the ethylene-(meth)acrylic base resin in order to make a uniform

blend that has good processability. The person of ordinary skill in the art would have learned from Yokoyama *et al.* ethylene-propylene resin having a density in the range of 0.86-0.91 g/cm<sup>3</sup> has good processability and moldability, and is therefore ideal for making wire insulation (abstract). The combination of references would have suggested that the ethylene-propylene resin of Yokoyama *et al.* is well-suited for use as the resin for making graft modified ethylene-propylene, and the combination would be obvious since both references relate to compositions for making wire insulation. Therefore, it would have been obvious to one having ordinary skill in the art to make the composition of Smith *et al.* by using a graft-modified ethylene propylene copolymer prepared from the ethylene propylene copolymer of Yokoyama *et al.*, and one having ordinary skill in the art would have expected the combination of teachings to work with a reasonable expectation of success.

#### *Response to Arguments*

7. Applicant traverses the claim objection and claim rejections under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in paragraphs 1, 4, and 6 of the previous office action dated September 9, 2007. Applicant's arguments and explanations have been considered fully, and they are persuasive. Consequently, the claim objection and claim rejections have been withdrawn.

The claim objection and claim rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in paragraphs 2 and 5 of the previous office action has been withdrawn in view of claim amendments.

The rejection of claims under 35 U.S.C. 102(b) as being anticipated by Smith *et al.* (U.S. 5,218,027), set forth in paragraph 10 of the previous office action, has been withdrawn in view of claim amendment. Accordingly, the rejection of claims under 35 U.S.C. 103(a) as being unpatentable over Smith *et al.* in view of Jow *et al.* (U.S. 5,288,785), set forth in subsequent paragraph 11, no longer applies and has been withdrawn.

Applicant submits that Smith *et al.* would teach away from using ultrahigh molecular weight polysiloxane since polysiloxanes have a viscosity preferably in the range of 100,000 to 9000,000 cP, and most preferably in the range of 30,000 to 600,000 cP. This line of reasoning is not persuasive because a reference must be considered in its entirety and that the disclosure of a

reference is not limited to preferred embodiments or specific working examples therein. Rather, the references are relevant for all that they contain. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 570 (CCPA 1982); *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976). *In re Heck*, 669 F.2d 1331, 1333, 216 USPQ 1038, 1039 (Fed. Cir. 1983). Clearly, one skilled in the art would have found it obvious to use a polysiloxane having viscosity of up to 300 X 10<sup>6</sup> cP because Smith *et al.* teaches polysiloxanes within the entire range are useful for practicing the invention. Therefore, Smith *et al.* does not teach away from using the claimed polysiloxane because there is nothing that would discourage a person of ordinary skill in the art, upon reading the reference, from following the path set out in the reference. *Tec Air, Inc. v. Denso Manufacturing Michigan*, 192 F.3d 1353, 1360, 52 USPQ 2d 129 (Fed. Cir. 1999).

The rejection of claims under 35 U.S.C. 103(a) as being unpatentable over Hall (U.S. 6,025,422) in view of Jow *et al.* has been overcome by amendment. The reference does not teach a polysiloxane having a viscosity of greater than 10<sup>6</sup> cSt.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu S. Jagannathan, can be reached at (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Rip A. Lee/  
Art Unit 1796

November 20, 2008

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796